Validated By CRFValidator v 1.0.3

Application No: 10560918 Version No: 2.0

Input Set:

Output Set:

Started: 2007-08-27 07:46:33.273
Finished: 2007-08-27 07:46:37.624
Elapsed: 0 hr(s) 0 min(s) 4 sec(s) 351 ms
Total Warnings: 87
Total Errors: 0
No. of SeqIDs Defined: 108
Actual SeqID Count: 108

Error code		Error Description
W	213	Artificial or Unknown found in <213> in SEQ ID (2)
W	213	Artificial or Unknown found in <213> in SEQ ID (4)
W	213	Artificial or Unknown found in <213> in SEQ ID (5)
W	213	Artificial or Unknown found in <213> in SEQ ID (6)
W	213	Artificial or Unknown found in <213> in SEQ ID (7)
W	213	Artificial or Unknown found in <213> in SEQ ID (8)
W	213	Artificial or Unknown found in <213> in SEQ ID (9)
W	213	Artificial or Unknown found in <213> in SEQ ID (10)
W	213	Artificial or Unknown found in <213> in SEQ ID (11)
W	213	Artificial or Unknown found in <213> in SEQ ID (12)
W	213	Artificial or Unknown found in <213> in SEQ ID (13)
W	213	Artificial or Unknown found in <213> in SEQ ID (14)
W	213	Artificial or Unknown found in <213> in SEQ ID (15)
W	213	Artificial or Unknown found in <213> in SEQ ID (16)
W	213	Artificial or Unknown found in <213> in SEQ ID (17)
W	213	Artificial or Unknown found in <213> in SEQ ID (18)
W	213	Artificial or Unknown found in <213> in SEQ ID (19)
W	213	Artificial or Unknown found in <213> in SEQ ID (20)
W	213	Artificial or Unknown found in <213> in SEQ ID (21)
W	213	Artificial or Unknown found in <213> in SEQ ID (22)

Input Set:

Output Set:

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No. of SeqIDs Defined: 108
Actual SeqID Count: 108

Error code	Error Description
	This error has occured more than 20 times, will not be displayed

SEQUENCE LISTING

<110> BAKER, Matthew
WATKINS, John

<120> MODIFIED HIRUDIN PROTEINS AND T-CELL
EPITOPES IN HIRUDIN

<130> MER-142

<140> 10560918
<141> 2005-12-16

<150> PCT/EP2004/006943
<151> 2004-06-25

<150> EP 03014332.5
<151> 2003-06-26

<160> 108

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 30
<212> PRT
<213> hirudo medicinalis

<400> 1
Cys Ile Leu Gly Ser Asp Gly Glu Lys Asn Gln Cys Val Thr Gly
1 5 10 15
Glu Gly Thr Pro Lys Pro Glu Ser His Asn Asp Gly Asp Phe Glu
20 25 30

<210> 2
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<221> VARIANT
<222> 13, 15, 21, 29
<223> X=T, L;
X=T, A, H, Q, T, L;
X=A, G, H, K, N, P,Q, R, V;
X=A,D,E,G,H,K,N,Q,R,S,T,I;

<221> VARIANT
<222> 30, 40, 47, 48
<223> X=A,D,E,G,H,K,N,P,Q,R,S,T,L;

X=A, T, V;
X=T, K;
X=A, T, P

<221> VARIANT
<222> 53, 56
<223> X=E, N, R, D;
X=H, F

<400> 2
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Xaa Cys Xaa Cys
1 5 10 15
Glu Gly Ser Val Xaa Cys Gly Gln Gly Asn Lys Cys Xaa Xaa Gly Ser
20 25 30
Asp Gly Glu Lys Asn Gln Cys Xaa Thr Gly Glu Gly Thr Pro Xaa Xaa
35 40 45
Glu Ser His Asn Xaa Gly Asp Xaa Glu Glu Ile Pro Glu Glu Tyr Leu
50 55 60
Gln
65

<210> 3
<211> 65
<212> PRT
<213> hirudo medicinalis

<400> 3
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
1 5 10 15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Ile Leu Gly Ser
20 25 30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
35 40 45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
50 55 60
Gln
65

<210> 4
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 4
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
1 5 10 15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Ala Ala Gly Ser
20 25 30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
35 40 45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
50 55 60

Gln
65

<210> 5
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 5
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Arg His Gly Ser
            20   25   30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
        35   40   45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50   55   60
Gln
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<210> 6
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 6
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Glu Lys Gly Ser
            20   25   30
Asp Gly Glu Lys Asn Gln Cys Ala Thr Gly Glu Gly Thr Pro Lys Pro
        35   40   45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50   55   60
Gln
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<210> 7
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 7
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15

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Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Glu Lys Gly Ser
            20                  25                  30
Asp Gly Glu Lys Asn Gln Cys Thr Thr Gly Glu Gly Thr Pro Lys Pro
        35                  40                  45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50                  55                  60
Gln
65
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<210> 8
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 8
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1               5                  10                  15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Glu Lys Gly Ser
            20                  25                  30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
        35                  40                  45
Glu Ser His Asn Glu Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50                  55                  60
Gln
65
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<210> 9
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 9
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1               5                  10                  15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Glu Lys Gly Ser
            20                  25                  30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
        35                  40                  45
Glu Ser His Asn Asn Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50                  55                  60
Gln
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```

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<210> 10
<211> 65
<212> PRT
<213> Artificial Sequence
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<220>
<223> modified hirudin

<400> 10
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Arg Lys Gly Ser
            20   25   30
Asp Gly Glu Lys Asn Gln Cys Ala Thr Gly Glu Gly Thr Pro Lys Pro
        35   40   45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50   55   60
Gln
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<210> 11
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 11
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Arg Lys Gly Ser
            20   25   30
Asp Gly Glu Lys Asn Gln Cys Thr Thr Gly Glu Gly Thr Pro Lys Pro
        35   40   45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50   55   60
Gln
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<210> 12
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 12
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Arg Lys Gly Ser
            20   25   30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
        35   40   45
Glu Ser His Asn Glu Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50   55   60
Gln
65

<210> 13
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 13
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Arg Lys Gly Ser
            20   25   30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
        35   40   45
Glu Ser His Asn Asn Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50   55   60
Gln
65

<210> 14
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 14
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Arg Arg Gly Ser
            20   25   30
Asp Gly Glu Lys Asn Gln Cys Thr Thr Gly Glu Gly Thr Pro Lys Pro
        35   40   45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50   55   60
Gln
65

<210> 15
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 15
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Ala Lys Gly Ser
            20   25   30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro

```
        35                  40                  45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50                  55                  60
Gln
65
```

<210> 16
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 16
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Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1               5                  10                  15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Ala Gln Gly Ser
            20                  25                  30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
        35                  40                  45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50                  55                  60
Gln
65
```

<210> 17
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 17
```
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1               5                  10                  15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Ala Arg Gly Ser
            20                  25                  30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
        35                  40                  45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50                  55                  60
Gln
65
```

<210> 18
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 18
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Ala Thr Gly Ser
            20   25   30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
        35   40   45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50   55   60
Gln
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<210> 19
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 19
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Asp Ala Gly Ser
            20   25   30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
        35   40   45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50   55   60
Gln
65

<210> 20
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 20
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Asp Gln Gly Ser
            20   25   30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
        35   40   45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50   55   60
Gln
65

<210> 21
<211> 65

<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 21
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Asp Arg Gly Ser
            20   25   30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
        35   40   45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50   55   60
Gln
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<210> 22
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 22
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Glu Lys Gly Ser
            20   25   30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
        35   40   45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50   55   60
Gln
65

<210> 23
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 23
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Glu Gln Gly Ser
            20   25   30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
        35   40   45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50   55   60

Gln
65

<210> 24
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 24
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Glu Arg Gly Ser
            20   25   30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
        35   40   45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50   55   60
Gln
65

<210> 25
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 25
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Glu Thr Gly Ser
            20   25   30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
        35   40   45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50   55   60
Gln
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<210> 26
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 26
Val Val Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
 1   5   10   15

```
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Arg Lys Gly Ser
            20                  25                  30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
        35                  40                  45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50                  55                  60
Gln
65
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<210> 27
<211> 65
<212> PRT
<213> Artificial Sequence

<220>
<223> modified hirudin

<400> 27

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 1               5                  10                  15
Glu Gly Ser Val Val Cys Gly Gln Gly Asn Lys Cys Arg Gln Gly Ser
            20                  25                  30
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
        35                  40                  45
Glu Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
    50                  55                  60
Gln
65
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<210> 28
<211> 65
<212> PRT
<213